All initial and continuing calibrations associated with the project samples met QC criteria with the exception of the following:

- The following exhibited an average CCAL %D>15 and/or confirmation %D>25 percent: non-detect results were estimated (qualified 'UJ'); positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822705	KB2006	AR1016, AR1260	UJ

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD and LCS were performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected.

4.7 Herbicides by SW-846-8151A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exception of the following:

- The following exhibited a percent difference between the original and second column greater than 25: positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822708	KB3015	Dalapon	J

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822706	KB0011, KB0012	All reported compounds	UJ

Matrix Spike/Matrix Spike Duplicate

MS/MSD were evaluated, no problems were noted and all QC criteria were met.

Laboratory Control Sample/Laboratory Control Sample Duplicate

LCS was evaluated and all QC criteria were met, with the exception of the following. Qualification was necessary due to low percent recoveries in the batch LCS.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier

PK822705	KB2001, KB2002	2,4-D	UJ

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exception of the following:

- The following exhibited an average CCAL %D>15 and/or confirmation %D>25 percent: nondetect results were estimated (qualified 'UJ'); positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822716	KB3003R, KB3004R	2,6-Dinitrotoluene	UJ
PK822717	KB3007R, KB3010R, KB3011R, KB3014R, KB3015R	2,6-Dinitrotoluene	UJ

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike/Matrix Spike Duplicate

MS/MSD were evaluated and no problems were noted and all QC criteria were met.

Laboratory Control Sample/Laboratory Control Sample Duplicate

LCS was evaluated and all QC criteria were met, with the exception of the following. Qualification was necessary due to low percent recoveries and high RPDs in the batch LCS.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822719	KB2001R, KB2004R, KB2005R, KB2006R, KB2007R, KB3006R, KB3008R, KB3009R	Tetryl	UJ

Field Duplicates

Original and field duplicate results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected.

4.9 Wet Chemistry Total Organic Carbon by SW-846-9060

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike / Matrix Spike Duplicate

MS/MSD and LCS were performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected.

5.0 Quality Assurance Field Split Sample Data Evaluation

Data from the quality assurance split samples supplied to IT by the U.S. Army Corps of Engineers were reviewed for comparability to the original and FD results. RPDs were calculated and the results are summarized in this section.

Field split data for SDG PK822705

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
KB2001	KB2002	KB2003

Comments:

- Metals: A majority of the same metals were detected in all three samples. Mercury and lead were not reported in the FS, but were detected below the reporting limit in the original and/or FD. Barium and sodium with RPD values above the QC limit were detected below the reporting/quantitation limit in the original and the FD. The high RPD value for manganese was comparable to the FD. Differences attributed to non-homogeneity in samples and/or FS lab not reporting results below the RL.

- Volatiles: No volatiles were detected in the FS sample. Acetone, a common laboratory contaminant, was detected in the original sample below the reporting/quantitation limit. Differences attributed to non-homogeneity in samples and/or FS lab not reporting results below the RL.

- Semivolatiles: No semivolatiles were detected in the original or the FS. bis (2-Ethylhexyl) phthalate, a common laboratory contaminant, was detected below the

reporting limit in the FD sample. Differences attributed to nonhomogeneity in soil samples and/or FS lab not reporting results below the RL.

- Pesticides, OP Pesticides, Herbicides, PCBs: No compounds were detected in the original sample, FD or FS.

Field Split Data for SDG PK822706

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
KB0011	KB0012	KB0013

Comments:

- Metals: A majority of the same metals were detected in all three samples. Of the high RPD values for nickel, potassium, sodium and zinc, only zinc was detected above the RL. Metals found in the original and FD, but not in the FS were mercury, selenium, beryllium, cobalt and copper. Beryllium and cobalt were detected below the reporting limit. Differences attributed to nonhomogeneity in samples and/or FS lab not reporting results below the RL.

- Volatiles: No volatiles were detected in the FS sample. Acetone was detected in the original and the FD. Methylene chloride a common laboratory contaminant was detected below the RL in both the original and FD samples. Trichlorofluoromethane was detected in the FD below the RL. Differences attributed to nonhomogeneity in samples and/or FS lab not reporting results below the RL.

- Semivolatiles, Pesticides, OP Pesticides, Herbicides, PCBs: No compounds were detected in the original sample, FD or FS.

Field Split Data for SDG PK822709

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
KB0020	KB0021	KB0022

Comments:

- Metals: A majority of the same metals were detected in all three samples. Aluminum and sodium had RPDs above the QC limits. Sodium was detected below the reporting /quantitation limit for the original and FS. Four of five metals not detected in the FS that were found in the original and/or FD were below the RL. Differences attributed to the FS lab not reporting results below the RL and/or lack of sample homogeneity.

- Volatiles: Acetone and methylene chloride, common laboratory contaminants, were detected below the RL in the original and/or FD. Trichlorofluoromethane and p-isopropyltoluene were detected below the RL in the original and/or FD. *Note, five volatiles were found at elevated levels in the FS. Possible laboratory error suspected because of the extreme levels detected, with no detects in the original and FD. Sample dilutions were 1 to 50. Differences attributed to nonhomogeneity in the samples and/or FS lab not reporting results below the RL.

- Semivolatiles: No semivolatiles were detected in the FS. bis (2-Ethylhexyl) phthalate, a common laboratory contaminant, was detected below the RL in the original and FD samples. Differences attributed to nonhomogeneity in the samples and/or FS lab not reporting results below the RL.

- Pesticides, OP Pesticides, Herbicides, PCBs: No compounds were detected in the original sample, FD or FS.

Field Split Data for SDG PK822713

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
KB3008	KB3012	KB3013

Comments:

- Metals: A majority of the same metals were detected in all three samples. Aluminum and iron had RPDs above the QC limits. Beryllium and potassium were detected below the RL in the original, but not detected in the FD. Differences attributed to the FS lab not reporting results below the reporting limit and/or lack of sample homogeneity.

- Volatiles: No volatiles were detected in the original or FS. Methylene chloride, common laboratory contaminant, was detected below the RL in the FD. Differences attributed to nonhomogeneity in the samples and/or FS lab not reporting results below the RL.

- Semivolatiles: Pesticides, OP Pesticides, Herbicides, PCBs: No compounds were detected in the original sample, FD or FS

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report
For the Site Investigation Performed at the "Fill Area NW of Reilly Airfield (Parcel FA-229) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-229. The analytical data consisted of two sample delivery groups (SDGs), CK922701 and CK922901, which were analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW 846-8270C
Target Analyte List Metals by SW-846-6010B/7470A/7471A
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) and *Region III National Functional Guidelines for Organic Data Review* (June 1992) were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses

in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW-846, Code of Federal Regulations, SOPs) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validations for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organic Compounds by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following demonstrated relative response factors (RRF) below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'); positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK922701	DD0018	Bromomethane	R
CK922901	DD0017	Bromomethane	R

* **'R' qualifiers take precedence over estimating qualifiers.**

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ'); unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met; positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK922701	DD0018	2-Butanone, 2-Hexanone, Methylene Chloride, Bromomethane, Acetone	R/UJ/B
CK922901	DD0017	2-Butanone, 2-Hexanone, Methylene Chloride, Bromomethane, Acetone	R/UJ/B

* **'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, takes precedence over estimating qualifiers, assigned due to quantitation.**

* **'R' qualifiers take precedence over estimating qualifiers.**

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK922701	DD0018	Methylene Chloride	Method/ER	B
CK922901	DD0017	Methylene Chloride	Method/ER	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

Laboratory control sample(LCS) was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were identified.

Quantitation

Results quantified between the method detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ'); unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met; positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK922701	DD0018	Hexachlorocyclopentadiene , 2,4-Dinitrophenol	UJ
CK922901	DD0017	Hexachlorocyclopentadiene , 4,6-dinitro-2-Methylphenol	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK922701	DD0018	bis(2-Ethylhexyl)phthalate	Method	B
CK922901	DD0017	bis(2-Ethylhexyl)phthalate	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory, with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK922901	DD0017	Beryllium	Calibration	B

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK922701	DD0018	Zinc, Antimony	J/UJ

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All interference check sample (ICS) percent recoveries were acceptable. All QC criteria were met.

Inductively-Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK922701	DD0018	Cobalt, Magnesium	J

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the laboratory) were qualified as estimated (J).

4.4 Organochlorine Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK922901	DD0017	All compounds	J

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results

rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.5 Organophosphorus Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as

rejected 'R'.

4.6 Polychlorinated Biphenyls by SW-846-8082

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.7 Herbicides by SW-846-8151

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW 846 8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the Fill Area Northwest of Reilly Air Field (Parcel PPMP-229) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel PPMP-229. The analytical data consisted of nine sample delivery groups (SDGs), PK822901 through PK822909, which were analyzed by Quanterra Incorporated. Both soil and water matrices were validated. In addition, an evaluation of the field split data, which was analyzed by the USACE-SAD laboratory is included in this report. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Target Compound List Volatile Organics by Gas Chromatography/Mass Spectrometry SW-846-8260B
Target Compound List Semivolatiles by GC SW-846-8270C
Metals by SW-846-6010B and 7471A/7470A
Chlorinated Pesticides by SW-846-8081A
Organophosphorous Pesticides by SW-846-8141A
Polychlorinated Biphenyls by SW-846-8082
Herbicides by SW-846-8151A
Explosives - Nitroaromatics and Nitramines by High Performance Liquid Chromatography SW-846-8330

2.0 Procedures

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and 1994 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the

quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e., SW-846, Code of Federal Regulations, SOP, QAP) and technical judgment following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions, is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organics by GC/MS SW846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exceptions of the following:

- The following demonstrated RRFs below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte / Analytes	Validation Qualifier
PK822901	KC2001, KC2002, KC2003	Acetone, Bromochloromethane, 2-Butanone, Dibromomethane, 1,2-Dibromo-3-Chloropropane	**R
PK822902	KC1001, KC1002, KC1003	Acetone, 2-Butanone, Bromomethane	**R
PK822903	KC0003, KC0004, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	Acetone, 2-Butanone, Bromomethane	*B/**R/J
PK822904	KC0001, KC0002, KC0009, KC0010	Acetone, 2-Butanone	*B/**R/J
PK822905	KC0016, KC0017	Acetone, 2-Butanone	**R/J
PK822906	KC3006	Acetone, 2-Butanone, 1,2-Dibromo-3-Chloropropane	**R

SDG	Samples Affected	Analyte / Analytes	Validation Qualifier
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	Acetone, 2-Butanone, 1,2-Dibromo-3-Chloropropane	**R
PK822907	KC3007	Bromochloromethane, Dibromomethane	**R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum relative response factor (RRF) criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822901	KC2001, KC2002, KC2003	Acetone, 2-Butanone, Hexachlorobutadiene, 1,2-Dibromo-3-Chloropropane, Naphthalene, Methylene Chloride, p-Isopropyltoluene, 1,2,3-Trichlorobenzene, sec-Butylbenzene, 1,2,4-Trichlorobenzene, 4-Methyl-2-pentanone, 1,2-Dichlorobenzene, 1,4-Dichlorobenzene, n-Butylbenzene, Dichlorodifluoromethane	**R/UJ
PK822901	KC2002, KC2003	2-Hexanone	UJ
PK822902	KC1001, KC1002, KC1003	Bromomethane, Dichlorodifluoromethane, Methylene Chloride, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Chloroethane	*B/**R/UJ
PK822903	KC0003, KC0004, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	Bromomethane, Methylene Chloride, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Chloroethane	*B/**R/UJ/J

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0003, KC0004, KC0005, KC0006, KC0011, KC0012, KC0013, KC0015	Trichlorofluoromethane	UJ/J
PK822903	KC0007, KC0008	Dichlorodifluoromethane	UJ
PK822903	KC0005	1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene	UJ
PK822904	KC0001, KC0002, KC0009, KC0010	Acetone, Methylene Chloride	*B**R/J
PK822904	KC0001, KC0002	Dichlorodifluoromethane	UJ
PK822905	KC0016, KC0017	Bromomethane, Dichlorodifluoromethane, Methylene Chloride, Acetone, Trichlorofluoromethane, 1,2-Dichloroethane, 1,1,1-Trichloroethane, Carbon Tetrachloride	*B/UJ
PK822906	KC3006	Acetone, 2-Butanone, Carbon Disulfide, 1,2-Dibromo-3-Chloropropane, Naphthalene, Methylene Chloride, Dichlorodifluoromethane, Trichlorofluoromethane, 1,2-Dichloroethane, 1,1,1-Trichloroethane, Carbon Tetrachloride, 1,1-Dichloropropene, 2,2-Dichloropropane, Bromodichloromethane, Bromomethane, 1,1-Dichloroethane, Chloroethane	*B/**R/UJ
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	Methylene Chloride, 1,2,3-Trichlorobenzene, Naphthalene	*B/UJ/J
PK822907	KC3001, KC3002, KC3003, KC3005, KC3008	1,2-Dibromo-3-Chloropropane, Bromomethane, Dichlorodifluoromethane	**R/UJ
PK822907	KC3001, KC3008	Carbon Disulfide	UJ

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip blanks, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK822902	KC1001, KC1002, KC1003	Methylene Chloride	Method
PK822903	KC0003, KC0004, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	Methylene Chloride	Method
PK822903	KC0005, KC0006, KC0012, KC0013	Acetone	ER
PK822904	KC0001, KC0002, KC0009, KC0010	Methylene Chloride	Method
PK822904	KC0001, KC0002	Acetone	ER
PK822905	KC0016, KC0017	Methylene Chloride	Method
PK822906	KC3006	Methylene Chloride	Method/TB
PK822907	KC3002, KC3003, KC3005	Methylene Chloride	Method/TB

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC limits, with the following exceptions:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0015	Acetone, 2-Butanone, Methylene Chloride, Trichlorofluoromethane, Toluene, Vinyl Chloride	*B/J
PK822905	KC0017	Acetone, Methylene Chloride, p-Isopropyltoluene	*B/J

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) were evaluated and no problems were noted and all QC criteria were met, with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822904	KC0001, KC0002, KC0009, KC0010	Toluene	UJ/J

Laboratory Control Sample/Laboratory Control Sample Duplicate

Laboratory Control Sample (LCS) were evaluated and no problems were noted and all QC criteria were met.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were noted.

Internal Standards

All internal standards met criteria with the exception of the following:

- All compounds associated with the internal standards listed in the table below were qualified as indicated.

SDG	Samples Affected	Internal Standard Outside QC Limits	Validation Qualifier
PK822903	KC0003, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	1,4-Dichlorobenzene-d4	UJ
PK822903	KC0015	Chlorobenzene-d5	UJ/J
PK822904	KC0009	1,4-Dichlorobenzene-d4	UJ
PK822905	KC0017	1,4-Dichlorobenzene-d4	UJ/J
PK822905	KC0017	Chlorobenzene-d5	UJ

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 TCL Semivolatiles by GC/Mass Spectrometry SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exceptions of the following:

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822901	KC2003	Hexachlorocyclopentadiene	UJ
PK822902	KC1003	Benzo(ghi)perylene, Dibenz(a,h)anthracene, Diethylphthalate, Indeno(1,2,3-cd)pyrene	UJ
PK822903	KC0003, KC0004, KC0012, KC0013	2,4-Dinitrophenol, 4-Nitrophenol	UJ
PK822903	KC0003, KC0004, KC0011, KC0012, KC0013	Diethylphthalate	UJ
PK822903	KC0005, KC0006, KC0015	Benzo(ghi)perylene	UJ
PK822903	KC0005, KC0006, KC0008, KC0015	Dibenz(a,h)anthracene	UJ
PK822904	KC0009, KC0010	Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	UJ/J

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822905	KC0016	Benzo(ghi)perylene	UJ
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	3,3'-Dichlorobenzidine	UJ
PK822907	KC3001	1,4-Dichlorobenzene	J

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK822902	KC1001, KC1002	Bis(2-ethylhexyl)phthalate	Method

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC limits.

Matrix Spike/Matrix Spike Duplicate

MS/MSD and Laboratory Control Sample (LCS) were performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were noted, with the exception of the following:

Note: Soil-50 percent criteria applied. Water-35 percent criteria applied.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822907	KC3002(original), KC3003 (duplicate)	Bis(2-ethylhexyl)phthalate	J

Internal Standards

All internal standards met criteria.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing calibrations

All initial and continuing calibrations associated with the project samples met QC criteria with the exception of the following where the CCV result exceeded 20 percent of the true value:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0004, KC0011, KC0012, KC0013	Mercury	J

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were acceptable with the exceptions noted below:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Element/Elements	Associated Blank Contamination
PK822901	KC2001, KC2003	Sodium	Method/Calibration
PK822901	KC2003	Potassium	Calibration
PK822902	KC1001, KC1002, KC1003	Sodium	Method/Calibration/ER
PK822902	KC1003	Potassium	Calibration
PK822903	KC0003, KC0004, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	Sodium	Method/Calibration/ER
PK822904	KC0001, KC0002, KC0009, KC0010	Sodium	Method/Calibration/ER
PK822904	KC0001, KC0009	Thallium	Calibration
PK822905	KC0016, KC0017	Sodium	Method/Calibration/ER
PK822906	KC3006	Iron	Calibration
PK822907	KC3002, KC3003, KC3007, KC3008	Sodium	Calibration/ER
PK822907	KC3001, KC3005, KC3008	Aluminum	ER
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	Mercury	Method/Calibration
PK822907	KC3002, KC3003	Beryllium	Calibration

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met, with the following exceptions:

SDG	Samples Affected	Element/Elements	Validation Qualifier
PK822903	KC0003, KC0004, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	Cadmium, Barium, Antimony, Manganese, Chromium, Lead	UJ/J

SDG	Samples Affected	Element/Elements	Validation Qualifier
PK822904	KC0001, KC0002, KC0009, KC0010	Chromium, Manganese, Zinc, Antimony	UJ/J

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses.

Interference Check Sample

All interference check sample (ICS) percent recoveries, where applicable, were acceptable.

ICP Serial Dilutions

All QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0003, KC0004, KC0005, KC0006, KC0007, KC0008, KC0011, KC0012, KC0013, KC0015	Potassium, Zinc	J
PK822904	KC0001, KC0002, KC0009, KC0010	Cobalt, Copper, Zinc	J
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	Sodium	*B/J

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Field Duplicates

Original and FD results were evaluated and no problems were noted, with the exception of the following:

Note: Soil-50 percent criteria applied. Water-35 percent criteria applied.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0012 (original), KC0013 (duplicate)	Cobalt	J

Sample Quantitation

Results quantified between the instrument detection limit (IDL) and the RL ('B' flagged by the laboratory) were qualified as estimated ('J').

4.4 Chlorinated Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- Samples were qualified for the below listed compounds due to a correlation coefficient less than 0.990. Nondetect results were estimated (qualified 'UJ'); Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822902	KC1001, KC1002	Beta-BHC, Delta-BHC	UJ

- The following exhibited individual primary CCAL %D>15 percent and/or confirmation %D>25 percent, or the percent Difference between the original and second column was >25 percent; nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0007	4,4' - DDE	J

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0011, KC0012, KC0013	Endosulfan Sulfate	J
PK822903	KC0011	Endrin Ketone	J

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC limits.

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822902	KC1003	Aldrin	UJ
PK822903	KC0005, KC0006, KC0007, KC0008, KC0015	Aldrin	UJ

Field Duplicates

Original and FD results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.5 Organophosphorous Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exceptions of the following:

- The following exhibited individual ICAL %RSD>20; nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822905	KC0016, KC0017	Merphos, Naled	UJ
PK822906	KC3006	Demeton (Total), Merphos, Azinphos-Methyl, Fensulfothion	UJ
PK822907	KC3001, KC3002, KC3003, KC3005, KC3008	Demeton (Total), Merphos, Azinphos-Methyl, Fensulfothion	UJ
PK822907	KC3007	Merphos, Naled	UJ

- The following exhibited individual primary CCAL %D>15 percent and/or confirmation %D>25 percent: nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822901	KC2001, KC2002	Demeton (Total), Diazinon, Dichlorvos, Ethoprop, Mevinphos	UJ
PK822901	KC2002	Phorate	UJ
PK822901	KC2003	Naled	UJ

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822903	KC0003, KC0004, KC0011, KC0012	Demeton (Total), Diazinon, Dichlorvos, Ethoprop, Mevinphos, Disulfoton	UJ
PK822903	KC0003, KC0004, KC0005, KC0006, KC0011, KC0012, KC0013, KC0015	Phorate	UJ
PK822904	KC0001, KC0002, KC0009, KC0010	Mevinphos	UJ
PK822905	KC0016, KC0017	Demeton (Total), Diazinon, Dichlorvos, Ethoprop, Mevinphos, Phorate, Merphos, Ronnel, Azinphos-Methyl, Bolstar, Coumaphos, Disulfoton, Fensulfothion, Fenthion, Methyl Parathion	UJ
PK822906	KC3006	Demeton (Total), Diazinon, Ethoprop, Mevinphos, Naled, Merphos, Ronnel, Azinphos-Methyl, Bolstar, Coumaphos, Disulfoton, Fensulfothion, Fenthion, Chlorpyrifos, Methyl Parathion	UJ
PK822907	KC3001, KC3002	Demeton (Total), Thionazin, Naled, Dimethoate, Sulfotepp, Famphur, Malathion	UJ
PK822907	KC3003, KC3005, KC3007, KC3008	Demeton (Total), Diazinon, Ethoprop, Mevinphos, Ronnel, Azinphos-Methyl, Bolstar, Coumaphos, Disulfoton, Fenthion, Methyl Parathion	UJ
PK822907	KC3003, KC3005, KC3008	Thionazin, Malathion	UJ
PK822907	KC3001, KC3002, KC3003, KC3007, KC3008	Fensulfothion	UJ
PK822907	KC3003, KC3007, KC3008	Merphos	UJ

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822907	KC3007	Dichlorvos, Phorate	UJ
PK822907	KC3003, KC3005, KC3008	Naled, Dimethoate, Sulfotepp, Famphur, Chlorpyrifos	UJ
PK822909	KC1002R, KC1003R	Merphos, Malathion	UJ

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822905	KC0016, KC0017	Dimethoate	UJ
PK822908	KC0007R, KC0008R	Sulfotepp, Thionazin	UJ

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as

rejected 'R'.

4.6 PCBs by SW-846-8082

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exception of the following, where the %D for the CCAL exceeded the 15 percent criteria. Nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J'); Unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822901	KC2001, KC2002, KC2003	Aroclor 1016, Aroclor 1260	UJ

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD and LCS were performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results

rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.7 Herbicides by SW-846-8151A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822902	KC1003	All reported compounds	UJ
PK822903	KC0007, KC0008	All reported compounds	UJ

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822902	KC1003	Dichlorprop, MCPA, MCPP, Dinoseb, Dicamba	UJ

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses, with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822901	KC2001, KC2002	2,4-D	UJ

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	Nitrobenzene, 2-Nitrotoluene	UJ

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses, with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK822906	KC3006	1,3,5-Trinitrobenzene, Nitrobenzene 2,4-Dinitrotoluene, 2,6-Dinitrotoluene	UJ
PK822907	KC3001, KC3002, KC3003, KC3005, KC3007, KC3008	2-Amino-4,6-Dinitrotoluene, 4-Amino-2,6-Dinitrotoluene,	UJ

Field Duplicates

Original and FD results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

5.0 Quality Assurance Field Split Sample Data Evaluation

Data from the quality assurance split samples supplied to IT by the USACE were reviewed for comparability to the original and FD results. Relative percent differences were calculated and the results are summarized in this section.

Field split data for SDG PK822903

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
KC0012	KC0013	KC0014

Comments:

- Metals: A majority of the same metals were detected in all three samples. Mercury, lead, and beryllium were not detected in the FS, however mercury and beryllium were detected below the reporting limit in the original. Lead, copper, manganese, nickel, vanadium, and sodium had RPDs above the 50 percent QC limit for soils. Differences in analysis attributed to non-homogeneity in soil samples and/or FS lab not reporting results below the reporting limit.

- Volatiles: No volatiles were detected in the FS sample. Methylene chloride and acetone were detected below the reporting limit and acetone was detected in original and FD sample, both are common laboratory contaminants. Differences attributed to non-homogeneity in soil samples and/or FS lab not reporting results below the reporting limit.

- Semivolatiles: No semivolatiles were detected in the original or the FS. Bis (2-Ethylhexyl) phthalate, a common laboratory contaminant, was detected below the reporting limit in the FD sample. Differences attributed to non-homogeneity in soil samples and/or FS lab not reporting results below the reporting limit.

- Pesticides: Endosulfan sulfate was detected and reported below the reporting limit in the original and FD.

- OP Pesticides, Herbicides, Explosives: No compounds were detected in the original sample, FD or FS.

Field split data for SDG PK822907

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
KC3002	KC3003	KC3004

Comments:

- Metals: A majority of the same metals were detected in all three samples. All seven metals (Hg, Be, Cr, Cu, Ni, Na, V) were detected in the original and FD, but not detected in the FS and, except for chromium, the other metals were detected at less than the reporting limit. Chromium was detected at the reporting limit. High RPD probability

due to sampling sequence and field activities in sampling well waters and/or FS lab not reporting results below the reporting limit.

- Volatiles: No volatiles were detected in the FS. 1,4-Dichlorobenzene and trichloroethene were detected below the reporting limit, in the original and FD. Methylene chloride, a common laboratory contaminant was reported in the original and FD. Differences attributed to non-homogeneity in the samples and/or FS lab not reporting results below the reporting limit.

- Semivolatiles: No semivolatiles were detected in the FS. Bis (2-Ethylhexyl) phthalate, a common laboratory contaminant, was detected below the reporting limit in the original and FD. Differences attributed to non-homogeneity in the samples and/or FS lab not reporting results below the reporting limit.

- Pesticides, OP Pesticides, Herbicides, PCBs, Explosives: No compounds were detected in the original sample, FD or FS.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the "Fill Area North of Landfill No. 2" (Parcel FA-230) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-230. The analytical data consisted of one sample delivery group (SDG), CK923001, which was analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470A/7471A
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP

guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e., SW846, Code of Federal Regulations, SOP) and technical judgment, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions, is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organic Compounds by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- The following demonstrated relative response factors (RRFs) below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J'), unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK923001	DD0019	Bromomethane	*R

* 'R' qualifiers take precedence over estimating qualifiers.

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK923001	DD0019	Bromomethane, 2-Hexanone, 2-Butanone, Acetone, Methylene Chloride	*B/J/UJ/**R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK923001	DD0019	Methylene chloride	Method/ER	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples, and all QC criteria were met.

Laboratory Control Sample

Laboratory Control Sample (LCS) was performed for the project samples, and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were identified.

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK923001	DD0019	2,4-Dinitrophenol	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK923001	DD0019	bis(2-Ethylhexyl)phthalate	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All ICS percent recoveries were acceptable. All QC criteria were met.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples.

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantitated between the IDL and the RL ('B' flagged by the laboratory) were qualified as estimated ('J').

4.4 Organochlorine Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were

reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as "J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.5 Organophosphorus Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.6 Polychlorinated Biphenyls by SW-846 8082

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'. It should be noted that Aroclor 1260 results for sample DD0019, were estimated (qualified 'J'), due to altered pattern.

4.6 Herbicides by SW-846-8151

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the Fill Area North of Reilly Air Field (Parcel PPMP-230) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel PPMP-230. The analytical data consisted of eight sample delivery groups (SDG), PK152301 through PK152308, which were analyzed by Quanterra Incorporated. Both soil and water matrices were validated. In addition, an evaluation of the field split data, which was analyzed by the U.S. Army Corps of Engineers-South Atlantic Division laboratory, is included in this report. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Target Compound List Volatile Organics by Gas Chromatography/Mass Spectrometry SW-846-8260B
Target Compound List Semivolatiles by Gas Chromatography SW-846-8270C
Metals by SW-846-6010B and 7471A/7470A
Chlorinated Pesticides by SW-846-8081A
Organophosphorous Pesticides by SW-846-8141A
Polychlorinated Biphenyls by SW-846-8082
Herbicides by SW-846-8151A
Explosives - Nitroaromatics and Nitramines by High-Performance Liquid Chromatography SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The 1993 EPA *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and the 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in

the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatograph (GC) and GC/mass spectrometry (GC/MS) calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (I. e., SW-846, Code of Federal Regulations, SOPs, QAP) and technical judgement following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) were due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), semivolatiles, which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validations for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organics by GC/MS SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exceptions of the following:

- The following demonstrated relative response factor (RRF) below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152301	KCC1001, KCC1003, KCC1004	Acetone, 2-Butanone, Bromomethane	**R/J
PK152302	KCC2001, KCC2002, KCC2003	Acetone, 2-Butanone, Bromomethane, Dibromomethane, Bromochloromethane, 1,2-Dibromo-3-Chloropropane	**R
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	Acetone, 2-Butanone, Bromomethane	*B/**R/J
PK152304	KCC2004, KCC2005, KCC2006	Acetone, 2-Butanone, Dibromomethane, Bromochloromethane, 1,2-Dibromo-3-Chloropropane	*B/**R

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152304	KCC2004, KCC2006	Bromomethane	**R
PK152305	KCC0009, KCC0010, KCC0011, KCC0012, KCC0013, KCC0014	Acetone, 2-Butanone	*B/**R
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	Acetone, 2-Butanone	*B/**R/J
PK152307	KCC3001, KCC3002, KCC3004, KCC3005	Acetone, 2-Butanone, 1,2-Dibromo-3-Chloropropane	*B/**R/J
PK152307	KCC3005	Dibromomethane, Bromochloromethane	**R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'U') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152301	KCC1001, KCC1003, KCC1004	Bromomethane, Carbon Disulfide, 1,2-Dibromo-3-Chloropropane, Methylene Chloride, Chloroethane, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Trichlorofluoromethane	*B/**R/UJ
PK152302	KCC2001, KCC2002, KCC2003	Acetone, Hexachlorobutadiene, 1,2-Dibromo-3-Chloropropane, Naphthalene, Methylene Chloride, Bromomethane, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, n-Butylbenzene, 2-Hexanone	**R/UJ
PK152303	KCC0001, KCC0002,	Bromomethane,	*B/**R/UJ

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
	KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	Methylene Chloride, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Chloroethane	
PK152304	KCC2004, KCC2005, KCC2006	Acetone, 2-Butanone, Naphthalene, 1,2-Dibromo-3-Chloropropane, Dichlorodifluoromethane, 2-Hexanone, Methylene Chloride, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 4-Methyl-2-Pentanone	*B/**R/UJ/J
PK152304	KCC2004, KCC2006	Bromomethane, 1,2,3-Trichloropropane	**R/UJ
PK152304	KCC2005	Hexachlorobutadiene, n-Butylbenzene, 1,4-Dichlorobenzene, p-Isopropyltoluene, sec-Butylbenzene	UJ
PK152305	KCC0009, KCC0010, KCC0011, KCC0012, KCC0013, KCC0014	Acetone, Methylene Chloride	*B/**R
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	Acetone, Methylene Chloride, Dichlorodifluoromethane	*B/UJ/J
PK152307	KCC3001, KCC3002, KCC3004	Bromoform, Methylene Chloride, 1,2-Dibromo-3-Chloropropane	*B/**R/UJ
PK152307	KCC3005	Bromomethane	*B

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip blanks, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK152301	KCC1001, KCC1003, KCC1004	Methylene Chloride	Method
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	Methylene Chloride	Method
PK152303	KCC0001, KCC0005, KCC0006, KCC0007	Acetone	ER
PK152304	KCC2004, KCC2006	Acetone	TB
PK152305	KCC0009, KCC0010, KCC0011, KCC0012, KCC0013, KCC0014	Methylene Chloride	Method
PK152305	KCC0014	Acetone	ER
PK152306	KCC0017	Acetone	ER
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	Methylene Chloride	Method
PK152307	KCC3005	Acetone, Bromomethane, Naphthalene	Method
PK152307	KCC3004	p-Isopropyltoluene	Method
PK152307	KCC3001, KCC3002	Styrene	Method
PK152307	KCC3001	Ethylbenzene	Method
PK152307	KCC3001, KCC3002, KCC3004	Methylene Chloride, Toluene	Method/TB

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC limits, with the following exceptions:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152301	KCC1004	Acetone, 2-Butanone, Methylene Chloride,	*B/J
PK152305	KCC0009	Methylene Chloride, Ethylbenzene, Trichlorofluoromethane, m-Xylene & p-Xylene	*B/J
PK152305	KCC0010	Methylene Chloride, Trichlorofluoromethane	*B/J

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) and laboratory control sample (LCS) were performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were noted, with the exception of the following:

Note: Soil-50 percent criteria applied. Water-35 percent criteria applied.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152303	KCC0001(original), KCC0002 (duplicate)	Acetone, p-Isopropyltoluene	*B/J
PK152307	KCC3001(original), KCC3002 (duplicate)	Styrene, p-Isopropyltoluene	*B/J

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

Internal Standards

All internal standards met criteria with the exception of the following:

- All compounds associated with the internal standards listed in the table below were qualified as indicated.

SDG	Samples Affected	Internal Standard Outside QC Limits	Validation Qualifier
PK152301	KCC1003, KCC1004	1,4-Dichlorobenzene-d4	UJ
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	1,4-Dichlorobenzene-d4	UJ/J
PK152305	KCC0009, KCC0010, KCC0011, KCC0013	1,4-Dichlorobenzene-d4	UJ/J
PK152305	KCC0010	Chlorobenzene-d5	UJ
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	1,4-Dichlorobenzene-d4	UJ/J

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J', were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 TCL Semivolatiles by GC/MS SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exceptions of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: